



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/825,907	04/15/2004	James J. Keenan	381-27-065	8929
23935	7590	09/12/2005		
KOPPEL, JACOBS, PATRICK & HEYBL 555 ST. CHARLES DRIVE SUITE 107 THOUSAND OAKS, CA 91360			EXAMINER PAPE, ZACHARY	
			ART UNIT	PAPER NUMBER
			2835	

DATE MAILED: 09/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/825,907

Applicant(s)

KEENAN ET AL.

Examiner

Zachary M. Pape

Art Unit

2835

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-41 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 5-41 is/are rejected.
- 7) ☒ Claim(s) 4 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 August 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>7/1/2004</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claims 3, and 13 are objected to because of the following informalities:

In line 1 the phrase, "said first PCM" lacks antecedent basis. If the applicant wishes to use the phrase, "PCM" within the claims, it should first be established in a prior claim (i.e. phase change material (PCM)).

Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 13 recite the limitation "said hydrogen filter" in line 3. There is insufficient antecedent basis for this limitation in the claim. It appears that the claim should be changed to read, "The inner cabinet of claim 12".

Claim 14 is also rejected for at least the reason that it depends from rejected claim 13

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 5, 8-9, 11, 15-17, 19-25, 27-31, 33-41 are rejected under 35 U.S.C. 102(b) as being anticipated by Gudmundsson et al. (US 2001/0033961).

With respect to claim 1, Gudmundsson et al. teaches a cabinet, comprising: an inner cabinet (5) comprising a plurality of inner walls that form an enclosure (As illustrated in Fig 1); a first phase change material covering at least some of said plurality of inner walls (Column 3, Lines 21-23); an outer cabinet (3) positioned around said inner cabinet (As illustrated in Fig 1) and also comprising a plurality of outer walls arranged such that there is a space (8a, 8b) between said inner and outer walls; and a mechanism (15) for drawing air from outside of said outer cabinet into the space between said inner and outer walls (As illustrated in Fig 1, air enters at 24, then passes through 11).

With respect to claim 2, Gudmundsson et al. further teaches that the inner cabinet comprises top and bottom walls and a plurality of substantially vertical walls running between said top and bottom wall (Where the top and bottom walls are above and below the numeral 7 in Fig 1, and the side walls parallel the walls in which 11 and 13 are positioned on the outer walls).

With respect to claim 3, Gudmundsson et al. further teaches that the first PCM is arranged in horizontal compartments (Comprising 35 and 7a,b) covering at least one of said substantially vertical walls (Where the PCM (7) in the compartment will cover the vertical walls for at least the reason that the PCM is located in the elongated compartments (35) and each end comprise the vertical wall of the inner cabinet).

With respect to claim 5, Gudmundsson et al. further teaches that the at least some of said outer walls (3) are adjacent to said substantially vertical walls (As illustrated in Fig 1), said mechanism (15) for drawing air arranged to draw outside air between each of said substantially vertical walls and its adjacent one of said outside walls (As illustrated in Fig 1, outside air is drawn into the space (8b) where the bottom horizontal wall of the outer cabinet is on one side of the space, and the vertical wall of the inner cabinet is on the other side of the space, where air flows in the space).

With respect to claim 8, Gudmundsson et al. further teaches comprising a controller (17) for controlling said mechanism for drawing air.

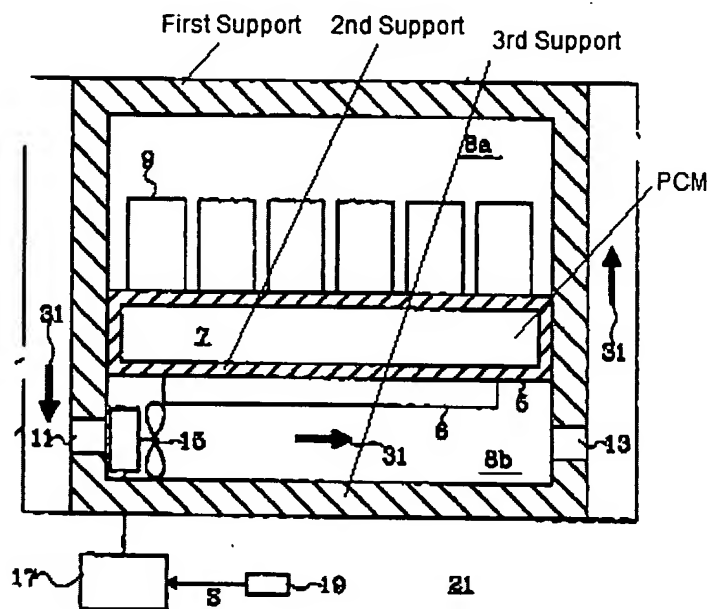
With respect to claim 9, Gudmundsson et al. further teaches that each of said substantially vertical walls comprises a tray (Inside of the vertical wall) for holding said phase change material (Some of the phase change material will inevitably condense on all 4 walls of (5) and therefore both vertical walls will act as a tray to hold some of the phase change material).

With respect to claim 11, Gudmundsson et al. further teaches that the top and bottom walls are covered by a layer of said phase change material (As illustrated in Fig 1, the inner cabinet (5) contains PCM (7) in which the PCM will collect on the top and bottom walls of the cabinet creating a layer of PCM).

With respect to claim 15, Gudmundsson et al. further teaches a thermally insulated electrical cabinet, comprising: first and second supports (See present office action Fig 1 below); a phase-change material (7) disposed between said first and second supports (As illustrated in present office action Fig 1 below); and third support

Art Unit: 2835

(See present office action Fig 1 below) to establish an air gap (8b) with said second support; wherein said phase change material inhibits heat transfer between said first and third supports (Where if heat is supplied to the first support, the heat will be inhibited from transferring to the 3rd support since it must, at least in part, pass through the PCM which at least partially inhibits heat transfer (Since the material itself will absorb heat)).

**Fig 1**

With respect to claim 16, Gudmundsson et al. further teaches that the third support comprises an exterior wall for said electrical cabinet (As illustrated in the present office action Fig 1 above).

With respect to claim 17, Gudmundsson et al. further teaches that the phase change material comprises a hydrated salt (Paragraph 29).

Art Unit: 2835

With respect to claim 19, Gudmundsson et al. further teaches an exterior wall (In which 13 is formed) spaced apart from one of said first and second supports to establish an air space (81, 8b).

With respect to claim 20, Gudmundsson et al. further teaches a fan (15) to draw air through said air space (8b).

With respect to claim 21, Gudmundsson et al. further teaches that the first support comprises: a flange (Wall in which 11 is formed) adapted to couple said first support to said second support (As illustrated in Fig 1 above, the wall in which 11 is formed couples the first support to the 2nd support).

With respect to claim 22, Gudmundsson et al. further teaches that the second support (5) comprises: a flange (6) to provide bending stiffness to said second support (As illustrated in Figs 1 and 2 of Gudmundsson et al. the second support (5) can contain the flanges (6) which would provide bending stiffness to the second support).

With respect to claim 23, Gudmundsson et al. further teaches a spacer (9) disposed between said first and second supports (As illustrated in present office action Fig 1 above) to maintain a predetermined spacing between said first and second supports (The spacing of gap (8a) must be at least the length of 9).

With respect to claim 24, Gudmundsson et al. further teaches an electrical enclosure, comprising: a plurality of walls (As illustrated in Fig 1) to establish an electrical component cavity (Comprising 8a, 8b, and 5); and a phase-change material (7) substantially covering at least one of said plurality of walls (5); wherein said phase change material insulates said electrical component cavity from heat energy (The phase

change material will absorb at least some heat energy during the phase change, and since the temperature of the medium during a phase change stays constant, the enclosure will be insulated from at least some heat energy).

With respect to claim 25, Gudmundsson et al. further teaches that the phase change material comprises a hydrated salt (Paragraph 29).

With respect to claim 27, Gudmundsson et al. further teaches a plurality of phase change material containers (35) disposed on one of said plurality of walls to contain said phase-change material (Paragraph 23, Lines 15-18).

With respect to claim 28, Gudmundsson et al. further teaches an exterior wall (Wall in which the controller (17) is attached, as illustrated in Fig 1) spaced apart from at least one of said plurality of phase-change material containers (Since 5.1 of Fig 2 can be placed in 5 of Fig 1 above, the phase change material containers (35) are spaced apart from the exterior wall) to establish an air space (8b).

With respect to claim 29, Gudmundsson et al. further teaches a fan (15) to draw air through said air space (8b).

With respect to claim 30, Gudmundsson et al. further teaches an electrical enclosure, comprising: a plurality of walls (As illustrated in Fig 1) establishing an electrical component cavity (Comprising 8a, 7 and 8b); a phase-change material (7) and means (5) for containing said phase-change material, said means for containing disposed on one of said plurality of walls (5 is disposed on both the left wall (The wall in which 11 is disposed) and the right wall (The wall in which 13 is disposed)) to establish insulation against heat energy (The phase change material within the means will absorb

heat energy and thus establish insulation against heat energy); wherein said phase-change material provides insulation for said electrical enclosure.

With respect to claim 31, Gudmundsson et al. further teaches that the phase change material comprises a hydrated salt (Paragraph 29).

With respect to claim 33, Gudmundsson et al. further teaches a plurality of phase change material containers (35) disposed on one of said plurality of walls to contain said phase-change material (Paragraph 23, Lines 15-18).

With respect to claim 34, Gudmundsson et al. further teaches an exterior wall (Wall in which the controller (17) is attached, as illustrated in Fig 1) spaced apart from at least one of said plurality of phase-change material containers (Since 5.1 of Fig 2 can be placed in 5 of Fig 1 above, the phase change material containers (35) are spaced apart from the exterior wall) to establish an air space (8b).

With respect to claim 35, Gudmundsson et al. further teaches a fan (15) to draw air through said air space (8b).

With respect to claims 36-38, the method steps recited in the claims are inherently necessitated by the device structure as taught by the Gudmundsson et al. reference.

With respect to claim 39, Gudmundsson et al. further teaches an electrical enclosure, comprising: a phase-change panel (5); an exterior panel (The bottom most panel in which 17 is attached as illustrated in Fig 1) spaced adjacent to said phase change panel; and a fan (15) to circulate air between said phase change panel and exterior panel; wherein said fan reduces thermal energy introduced to said phase-

Art Unit: 2835

change panel by said exterior wall (Since the fan will carry away heat the exterior panel, it will reduce thermal energy introduced to the phase change panel by the exterior wall).

With respect to claim 40, Gudmundsson et al. further teaches that the phase-change panel comprises: a plurality of containers (35); and a phase-change material disposed in said containers to absorb heat energy (Paragraph 23, Lines 15-18).

With respect to claim 41, Gudmundsson et al. further teaches that the phase-change panel comprises: spacers (Fig 2 illustrates spacers dividing each cavity (35)) to maintain a cavity for a phase-change material disposed in said phase-change panel.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gudmundsson et al in view of Stoller (US 6,164,369).

With respect to claim 6, Gudmundsson et al. teaches the limitations to claim 5 above, but fails to teach that the mechanism (15) for drawing air comprises a fan panel having a plurality of fans each of which is arranged to draw outside air between one of said substantially vertical walls and its adjacent one of said outside walls. Stoller teaches a cabinet (12) that utilizes a fan panel (33) having a plurality of fans (42) each of which is arranged to draw outside air into the inner cabinet (As illustrated in Figs 2,

3). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the fans of Stoller with the cabinet of Gudmundsson et al. to provide additional cubic feet per minute of cooling to the phase change material to reduce the time necessary for the PCM to return to the solid state from the liquid state.

With respect to claim 7, Stoller further teaches that the fan panel can selectively operate each of its said plurality of fans selectively draw outside air between one of said substantially vertical walls and its adjacent one of said outside walls (As illustrated in Fig 1, Stoller has two fans (42) each of which CAN be operated selectively to draw outside air into the cabinet).

Claim 10 rejected under 35 U.S.C. 103(a) as being unpatentable over Gudmundsson et al. in view of Baer (US 4,913,985).

With respect to claim 10, Gudmundsson et al. teaches the limitation of claim 1 above, but fails to teach that the cabinet comprises a layer of insulation on the inside surface of each of said outer walls. Baer teaches utilizing insulation (16) on the inside of a battery enclosure. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the insulating material of Baer with the cabinet of Gudmundsson et al. in order to inhibit heat transfer from outside the enclosure (Baer, Column 3, Lines 5-6). Inhibiting heat transfer will allow the internal batteries to remain cool when there are warmer exterior temperatures.

Claims 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gudmundsson et al. in view of Marongiu et al.

With respect to claim 12, Gudmundsson et al. teaches that the inner cabinet (5) is arranged to hold batteries (9, as illustrated in Fig 1). Gudmundsson et al. fails to teach that the inner cabinet further comprising a hydrogen filter to expel hydrogen from within said inner cabinet. Marongiu et al. teaches dissipating fumes generated by batteries (i.e. hydrogen) through the use of air filtration (Page 31, Left Column, Final Paragraph). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the air filtration of Marongiu et al. with the cabinet and batteries of Gudmundsson et al. to provide a means of removing the fumes from an enclosed area. Removing the fumes prevents buildup of harmful chemicals which could corrode the cabinet and further become a fire hazard.

With respect to claim 13, in so far as can be understood by the examiner, Marongiu et al. further teaches that the air inlet duct allows air into said inner cabinet as said hydrogen filter expels said hydrogen (Page 31, Left Column, Final paragraph where Marongiu states, "must also include the heat being brought in..". In order for the heat to be brought into the inner cabinet, it must contain an air inlet duct).

Claims 18, 26 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gudmundsson et al. in view of Salyer et al. (US 6,192,703).

With respect to claims 18, 26 and 32, Gudmundsson et al. teaches the limitation of claims 15, 24, and 30 above, but fails to teach that the phase change material

comprises a linear crystalline alkyl hydrocarbon. Salyer et al. teaches using a linear crystalline alkyl hydrocarbon as a phase change material (Salyer; Column 8, Lines 35-40). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Salyer et al. with the cabinet of Gudmundsson et al. to provide a non-toxic, affordable, and commercially available phase change material (Salyer; Column 8, Lines 41-59)

Allowable Subject Matter

5. Claim 4 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 14 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

With respect to claim 4, the allowability resides in the overall structure of the device as recited in dependent claim 4 and at least in part because claim 4 recites, "the horizontal compartments comprise tubes filled with said phase change material, said tubes on top of one another on said at least one of said substantially vertical walls". While Gudmundsson et al. teaches phase change material running through horizontal compartments (35), Gudmundsson et al. fails to teach a tube within the compartment,

and further fails to teach that the tubes are on top of one another on at least one of the substantially vertical walls.

The aforementioned limitations in combination with **all remaining limitations of claims 1-3** are believed to render said claim 4 and all claims dependent therefrom patentable over the art of record.

6. With respect to claim 14, in so far as can be understood by the examiner, the allowability resides in the overall structure of the device as recited in dependent claim 14 and at least in part because claim 14 recites, "Said inlet duct comprises tube surrounded by a second PCM said inlet duct entering said outer cabinet and running along one of said space between said inner and outer walls and then entering said inner cabinet". Gudmundsson et al. fails to teach a tube surrounded by a second PCM and therefore further fails to teach the path by which the tube runs.

In so far as can be understood by the examiner, the aforementioned limitations in **combination with all remaining limitations of claims 13, 12, and 1** are believed to render said claim 14 and all claims dependent therefrom patentable over the art of record.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US 3,110,633 further teaches a housing for a battery.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zachary M. Pape whose telephone number is 571-272-2201. The examiner can normally be reached on Mon. - Thur. & every other Fri. (8:00am - 5:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynn Feild can be reached at 571-272-2092. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ZMP


ANATOLY VORTMAN
PRIMARY EXAMINER